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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

JIE CHENG, ET AL.

Group Art Unit: 3629

Examiner: Michael J. Fisher

Serial No.: 09/607,069

Filed: June 29, 2000

For: METHOD FOR ESTIMATING A USED VEHICLE'S MARKET VALUE

Attorney Docket No.: 81056121 (FMC 1236 PUS)

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Mail Stop Appeal Brief - Patents
Commissioner for Patents
U.S. Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This is an Appeal Brief from the final rejection of claims 23, 24 and 26-41 of the Office Action mailed on June 29, 2004 for the above-identified patent application.

I. REAL PARTY IN INTEREST

The real party in interest is Ford Global Technologies, LLC ("Assignee"), a corporation organized and existing under the laws of the state of Delaware, and having a place of business at One Parklane Boulevard, Suite 600, Parklane Towers East, Dearborn, Michigan 48126, as set forth in the assignment recorded in the U.S. Patent and Trademark Office on April 22, 2003 at Reel 013987/Frame 0838.

CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8

I hereby certify that this paper, including all enclosures referred to herein, is being deposited with the United States Postal Service as first-class mail, postage pre-paid, in an envelope addressed to: Mail Stop Appeal Brief - Patents, Commissioner for Patents, U.S. Patent & Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450 on:

November 1, 2004	Matthew M. Jakubowski	
Date of Deposit	Name of Person Signing	Signature

II. RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences known to the Appellant, the Appellant's legal representative, or the Assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 23, 24 and 26-41 are pending in this application. Claims 23, 24 and 26-41 have been rejected and are the subject of this appeal.

IV. STATUS OF AMENDMENTS

No amendment after final rejection was filed.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Two independent claims are involved in this appeal, claims 23 and 33.

Claim 23 is directed to a computer-implemented method for estimating market value of a used vehicle. page 5, lines 5-6. The method includes steps A and B. Step A recites receiving data from a nearest neighbor database consisting of a number K of used vehicle nearest neighbor records, at least one target used vehicle record comprised of a plurality of used vehicle features, at least one constraint for determining a neighbor relationship between a pair of used vehicles, and a neighborhood distance function for determining a distance between a pair of used vehicles. page 7, line 25. Each used vehicle nearest neighbor record includes resale information and a plurality of used vehicle features. *Id.* The number K is iteratively selected for estimation accuracy based on a historical database of N used vehicle records. page 10, lines 1-11. Step B recites determining an estimated value for the at least one target used vehicle based on the data from the nearest neighbor database, the at least one target used vehicle record, the at least one constraint, and the neighborhood distance function. page 10, lines 1-11. The estimated value of the at least one target used vehicle is relied upon by individuals to at least price used vehicles for resale.

Claim 33 is directed to a computer-implemented method for estimating market value of a used vehicle. page 5, lines 5-6. The method includes steps A, B and C. Step A recites receiving data which includes: V_1 comprised of a number N of v_1, each v_1 comprising resale information and f_1, V_2 comprised of at least one v_2, each v_2 comprised of f_2, Const, F_d, K, and $Error_P$. page 7, line 25. Step B recites determining an $Error_K$ based on V_1, Const, F_d, and K. page 9, lines 2-29 through page 10, line 1 and page 11, lines 25-29 through page 12, lines 1-11. Step C recites if $Error_K$ is less than about $Error_P$, then carrying out sub-steps C1, C2 and C3. page 10, lines 1-11. C1 recites determining an estimated value for each v_2 in V_2 based on V_1, V_2, Const, F_d, and K. *Id.* C2 recites setting K to K plus 1 and $Error_P$ to $Error_K$. *Id.* C3 recites looping to step B. *Id.* V_1 equals data from a historical database comprised of a number N of used vehicle records. page 7, lines 25-26. v_1 equals a used vehicle record in V_1. page 8, lines 6-9. f_1 equals a plurality of vehicle features of v_1. page 8, lines 8-10. V_2 equals a data set comprised of at least one target used vehicle record. page 8, lines 2-4. v_2 equals a target used vehicle record. page 9, lines 3-8. f_2 equals a plurality of vehicle features of v_2. page 9, lines 3-8. Const equals an at least one constraint for determining a neighbor relationship between a pair of used vehicles. page 7, lines 26-29. F_d equals a neighborhood distance function for determining a distance between a pair of used vehicles. page 8, lines 22-26. K equals a nearest neighbor value. page 9, lines 20-22. $Error_P$ equals a previous estimation error. page 9, lines 17-18. $Error_K$ equals a used vehicle market error. page 9, lines 24-25 and page 10, line 1. The estimated value of each v_2 in V_2 is relied upon by individuals to at least price used vehicles for resale.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 33-41 stand rejected under 35 U.S.C. § 112, ¶ 1 as failing to comply with the enablement requirement.

Claims 23, 24 and 26-41 stand rejected under 35 U.S.C. § 103(a) as being obvious over the N.A.D.A. webpage from 11/1999 (NADA).

VII. ARGUMENT

A. Claims 33-41 Are Patentable Under 35 U.S.C. § 112, ¶ 1

Claims 33-41 stand rejected under 35 U.S.C. § 112, ¶ 1 as failing to comply with the enablement requirement. According to the Examiner, the formulae in claims 33, 35 and 36 are incomplete. The Examiner states that while the formulae list variables to be used, they do not explain how to use the variables, as there is no mention in the specification as to how to combine the variables to achieve the stated results, there is no way to use these claims. The Examiner states that vague references to using variables in a formula without explaining the exact formula, would not allow one of ordinary skill in the art to make and/or use the invention. The Examiner opines that the Applicant lists two Errors, p and k, without explaining how to compute the error.

The Applicant's specification sufficiently discloses the claimed invention to enable those skilled in the art to make and use it. M.P.E.P. § 2164. The Applicant has presented suitable proofs indicating that the teaching contained in the specification is enabling. *In re Marzocchi*, 169 U.S.P.Q. 367 (C.C.P.A. 1971); *In re Sichert*, 196 U.S.P.Q. 209 (C.C.P.A. 1977). Applicant has submitted detailed remarks specifically citing to support in the specification for the subject matter recited in claims 33-41. Amendment, 12/20/2002, pages 7-9 and Amendment, 06/10/03, pages 8-14. On March 2, 2004, Applicant submitted a Declaration under 37 C.F.R. § 1.132 dated February 27, 2004 in further support of enablement. The Declaration is signed by one of the inventors, Ms. Yi Lu ("the Lu declaration"). The Declaration attests that the inventors were in possession of the claimed invention at the time of filing the Application on June 29, 2000 and that the description filed therewith was sufficiently enabling to one of ordinary skill in the art to make and use the invention as recited in claims 33-41. Lu Declaration, 02/27/04, ¶ 5.

The Applicant reiterates its proofs of enablement for each claim that allegedly contains incomplete formulae, *i.e.* claims 33, 35 and 36.

1. Claim 33 Is Patentable Under 35 U.S.C. § 112, ¶ 1

Claim 33 recites a computer-implemented method for estimating value of a used vehicle. The method contemplates using a group of parameters that the Applicant has assigned variable names in order to clarify the claimed invention. One of ordinary skill in the art understands how to use the assigned variable names of claims 33-41 to implement the claimed method for estimating value of used vehicles. Lu Declaration, 02/27/04, ¶ 6. The parameters of claims 33-41 are adequately described in the specification on pages 7 through 9 and enable one of ordinary skill in the art to practice the claimed method for estimating used vehicle value. (Lu Declaration, 02/27/04, ¶ 7). V_1 equals data from a historical database comprised of a number N of used vehicle records. page 7, lines 25-26 ("a historical database of used vehicles"). v_1 equals a used vehicle record in V_1. page 8, lines 6-9 ("historical database ... includes a plurality of records ... [of] used vehicle[s]"). f_1 equals a plurality of vehicle features of v_1. page 8, lines 8-10 ("plurality of records ... include a complete description of all the features ... of each used vehicle"). V_2 equals a data set comprised of at least one target used vehicle record. page 8, lines 2-4 ("a set of used vehicles (target vehicles) ... whose market value is to be estimated/predicted"). v_2 equals a target used vehicle record. page 9, lines 3-8 ("set of .. target vehicles ... contains detailed descriptions ... of each used vehicle"). f_2 equals a plurality of vehicle features of v_2. page 9, lines 3-8 ("set of used vehicles ... contains detailed descriptions of the features"). Const equals an at least one constraint for determining a neighbor relationship between a pair of used vehicles. page 7, lines 26-29 ("a set of neighbor constraints ... or maximum acceptable differences for a pair of vehicles to be considered neighbors"). F_d equals a neighborhood distance function for determining a distance between a pair of used vehicles. page 8, lines 22-26 ("distance functions ... are formulas which map or correlate a difference in features or vehicle contents between the pair of vehicles to an amount of used vehicle resale value"). K equals a nearest neighbor value. page 9, lines 20-22 ("the estimation accuracy of the current K value is evaluated using only the vehicles in the historical database"). $Error_P$ equals a previous estimation error. page 9, lines 17-18 ("previous error is set to a large number"). $Error_K$ equals a used vehicle market error. page 9, lines 24-25

and page 10, line 1 ("an average estimation error for the current K number of neighbors is computed ..., [this] estimation error is assigned to a variable $error_K$").

According to claim 33, step A recites receiving data which includes: V_1 comprised of a number N of v_1, each v_1 comprising resale information and f_1, V_2 comprised of at least one v_2, each v_2 comprised of f_2, Const, F_d, K, and $Error_P$. The data is explicitly disclosed and supported by the written description, as described in detail above. Receiving such data is also supported by the specification and knowledge of one reasonably skilled in the art. page 7, line 25 ("[the] ... process ... requires the following inputs"). The Lu Declaration supports that the detailed description at page 7, line 25 adequately describes and enables one of ordinary skill in the art to receive V_1 and V_2. Lu Declaration, 02/27/04, ¶ 8.

According to claim 33, step B recites determining an $Error_K$ based on V_1, Const, F_d, and K. The following passages from the original specification describe this determination step in such a way to use it (please note the variables v_1 and v_2 are used in a different context than claim 33):

> At block 34, the estimation accuracy of the current K value is evaluated using only the vehicles in the historical database 12. This step will be described in further detail hereinafter [on page 11, lines 25-29 and page 12, lines 1-11]. At block 36 an average estimation error for the current K number of neighbors is computed by dividing the sum of errors for all vehicles in historical database 12 by the total number of vehicles in historical database 12. This generates the average estimation error associated with the current value of K. The computed average estimation error is assigned to a variable $error_K$.
>
> page 9, lines 2 through page 10, line 1.
>
> where for each neighbor vehicle there is computed an estimation for the market value of the target vehicle by adjusting the known value of neighbor vehicle based on the distance function. At block 68, a distance-weighted average of all the adjusted known market value estimations is used to generate the final market value estimation for the target vehicle. For example, if there are three neighbors v_1, v_2 and v_3 and the distances are d1, d2 and d3, respectively, then the weights for v_1, v2 and v3 are

> W1=D1/(D1+D2+D3), W2=D2/ (D1+D2+D3), and W3=D3/(D1+D2+D3) where D1=(d1+d2+d3)/d1, D2=(d1+d2+d3)/d2 and D3= (d1+d2+d3)/d3. Finally, at block 70, the estimation error for the target vehicle is calculated by taking the difference between the estimated value and the actual resale price for the target vehicle.
>
> page 11, line 25 through page 12, line 11.

The Lu Declaration supports that the detailed description on page 9, line 2 through page 10, line 1 and page 11, line 25 through page 12, line 11 adequately describes and enables one of ordinary skill in the art to determine an $Error_K$ based on V_1, Const, F_d, and K. Lu Declaration, 02/27/04, ¶ 9.

According to claim 33, step C recites "if $Error_K$ is less than about $Error_P$, then (C1) determining an estimated value for each v_2 in V_2 based on V_1, V_2, Const, F_d, and K, (C2) setting K to K plus 1 and $Error_P$ to $Error_K$, and (C3) looping to step (B). The following passage from the original specification describes this iterative determination step in such a way as to use it:

> The average estimation error is checked for improvement, as represented by block 38. More specifically, it is determined whether $error_K$ is less than the previous error. If $error_K$ is less than the previous error, than the previous error is set equal to $error_K$, as represented by block 40. However, if $error_K$ is not less than the previous error, then the DWNN process is stopped and the market value estimations using the previous K are considered to be the most accurate values, as represented by blocks 38 and 48.
>
> page 10, lines 1-11.

The Lu Declaration supports that the detailed description on page 10, at lines 1-11 adequately describes and enables one of ordinary skill in the art to carry out step C of claim 33. Lu Declaration, 02/27/04, ¶ 10.

Accordingly, Applicant respectfully requests that the lack of enablement rejection be withdrawn.

2. Claim 35 Is Patentable Under 35 U.S.C. § 112, ¶ 1

In claim 35, step B of claim 33 is described in greater detail. Parameters not included in claim 33 are introduced in claim 35. These parameters are given variable names to clarify the claimed invention. The parameters are supported and enabled by the written description as originally filed. Lu Declaration, 02/27/04, ¶ 6. V' refers to a neighbor group. page 11, lines 10-12 ("all vehicles in historical database ... which satisfy the neighbor constraints ... are located and saved"). v' refers to a used vehicle in the V' set. page 11, lines 10-12 ("all vehicles in historical database ... which satisfy the neighbor constraints ... are located and saved").

According to claim 35, for each v_1 in V_1, (B11) a neighbor group V' of K used vehicles v' for v from V_1 based on Const, F_d, and f_1 is determined, (B12) for each v' in V', a weighted estimated value for v_1 based on v', f_1 and F_d is determined, (B13) an estimated value for v_1 based on each weighted estimated value of v_1 is determined, (B14) an estimated error for v_1 based on the estimated value for v_1 and the resale price of v_1, and (B2) $Error_K$ based on the estimated error for each v_1 in V_1, and N is determined. Applicant refers to the portions of the original specification cited above (page 9, lines 2-29; page 10, line 1; page 11, lines 25-29 and page 12, lines 1-11.) in support of claim 35. These passages clearly support and describe the subject matter of claim 35. The Lu Declaration also supports that the detailed description on pages 9 through 12 adequately describes and enables one of ordinary skill in the art to carry out steps (B11), (B12), (B13), and (B14) of claim 35. Lu Declaration, 02/27/04, ¶ 11. As such, Applicant respectfully requests that the lack of enablement rejection be withdrawn.

3. Claim 36 Is Patentable Under 35 U.S.C. § 112, ¶ 1

In claim 36, step C of claim 33 is described in greater detail. Parameters not included in claim 33 are introduced in claim 36. These parameters are given variable names to clarify the claimed invention. The parameters are supported and enabled by the written

description as originally filed. Lu Declaration, 02/27/04, ¶ 6. V' is a group of nearest neighbor vehicles. page 12, lines 22-24. ("only a K number of nearest neighbors in the neighborhood subset are selected based on the distances calculated"). v' refers to a used vehicle in the V' set. page 12, lines 22-24. ("only a K number of nearest neighbors in the neighborhood subset are selected based on the distances calculated").

According to claim 36, for each v_2 in V_2, (C11) a nearest neighbor group V' of K used vehicles v' for v_2 from V_1 based on Const, F_d, f_1, and f_2 is determined, (C12) for each v' in V', a weighted estimated value for v_2 based on v' F_d, f_1, and f_2 is determined, and (C13) an estimated value for v_2 based on each weighted estimated values of v_2 is determined. The following passage from the original specification describes these determination steps in such a way to use them:

> Referring now to Figure 4, a flowchart illustrating the steps for estimating the market value for all the used vehicles (target vehicles) 20 whose market value is unknown is illustrated, in accordance with the present invention. At block 80, all vehicles in the historical database 12 that satisfy the neighbor constraints 14 are found and segregated into a neighborhood subset. The distance between each neighbor vehicle in the neighborhood subset and the target vehicle whose market value is to be estimated is determined. However, only a K number of nearest neighbors in the neighborhood subset are selected based on the distances calculated, as represented by block 82. At block 84, it is determined whether there are enough neighbors to conduct a market value estimation. If there are not a K number of neighbors available, then the target vehicle is rejected and another target vehicle in used vehicles set 20 is selected, and the process repeats itself as represented by blocks 84, 92 and 80.
>
> However, if there are enough neighbors, then a market value for the target vehicle is estimated for each neighbor vehicle in the neighborhood subset. The market value estimation is calculated by adjusting the value of each neighbor by a market value dollar amount determined using the distance function 18, as represented by block 86. At block 88, a distance-weighted average of all market value estimations are computed to

> generated a final estimation for the target vehicle. For example, in a similar manner as described above, if there are three neighbors v_1, v_2 and v3 and the distances are d1, d2 and d3, respectively, then the weights for v_1, v_2 and v_3 are $W1 = D1/(D1+D2+D3)$, $W2 = D2/(D1+D2+D3)$, $W3 = D3/(D1+D2+D3)$ where $D1 = (d1+d2+d3)/d1$, $D2 = (d1+d2+d3)/d2$ and $D3 = (d1+d2+d3)/d3$. Finally, at block 90, the target vehicle whose market value has been estimated is added to the used vehicle data set 22.
>
> page 12, lines 12-29 and page 13, lines 1-20.

The Lu Declaration supports that the detailed description at page 12, line 12 through page 12, line 20 adequately describes and enables one of ordinary skill in the art to carry out the steps (C11), (C12), and (C13) of claim 36. Lu Declaration, 02/27/04, ¶ 12. As such, Applicant respectfully requests that the lack of enablement rejection be withdrawn.

B. Claims 23, 24 and 26-41 Are Patentable Under 35 U.S.C. § 103(a)

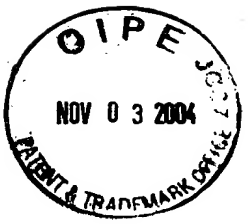
Claims 23, 24 and 26-41 stand rejected under 35 U.S.C. § 103(a) as being obvious over the N.A.D.A. webpage from 11/1999 (NADA). According to the Examiner, "NADA discloses a method for determining a vehicle's price which includes checking historical values for cars (paragraph 2 on page 1) and using this to generate values for autos." Office Action, 06/29/04, pages 2-3. The Examiner states "[w]hile they don't specifically mention adjusting for error, this would be inherent." *Id.* The Examiner opines that "[I]t is further inherent in the NADA that they [sic] user compares the values in the book to a similar car." *Id.* According to the Examiner, "[t]here are factors listed that increase and decrease the value of the auto, including; [sic] high mileage, low mileage, automatic or standard transmission, air conditioning, sound system, power accessories, region, sun/moon roof, spoiler, alloy wheels et al." *Id.* The Examiner states "they [NADA] further compare comparable vehicles for their prices and adjust the prices for other vehicles, they have a price for average and then list prices for clean, rough and further list a wholesale price." *Id.* According to the Examiner, "[t]hese values would be distance weighted from the average

price." *Id.* The Examiner states "[t]he NADA book further is region-specific and thus, there would be the ability to determine distance between autos." *Id.*

NADA's website does not teach, disclose, or suggest the invention as recited in the rejected claims. The historical database disclosed by NADA does not consist of a number K of used vehicle nearest neighbor records. NADA does not determine an estimated value for target used vehicles based on the data from the historical database consisting of a number K of used vehicle nearest neighbor records. Claim 23 recites receiving a nearest neighbor database of a number K of used vehicles. According to claim 23, the number K is iteratively selected for estimation accuracy based on a historical database of N used vehicle records. The other pending independent claim, claim 33, sets forth the iterative nearest neighbor aspect of the Applicant's invention in algebraic form.

These claimed features overcome the difficulties and shortcomings of NADA's method by using a local search mechanism. NADA uses a data set of comparable vehicles whereas the Applicant's control the number of comparable vehicles, *i.e.*, nearest neighbors, that are used in the estimation process to provide the most accurate estimation of market value. One feature of the Applicant's invention as recited in claims 23 and 33 is to select the best value for K such that the estimation error is minimized. NADA does not minimize estimation error based on selecting the best value for K, i.e., the number of nearest neighbors, if it minimizes error at all. Similarly, the method recited in claim 33 describes the method for minimizing error by selecting the best value for K, the number of nearest neighbors, and using this number of nearest neighbors as the basis for determining a used vehicle's market value. For at least these reasons, the Applicant's claimed invention is patentable in light of NADA.

Furthermore, one of ordinary skill in the art would not be motivated to modify NADA to provide the Applicant's invention as recited in the rejected claims. As acknowledged by the Examiner, NADA computes an average price based on comparable vehicles which is adjusted based on vehicle condition, whereas the Applicant's claimed method determines a subset of comparable vehicles, referred to as nearest neighbors, which are used as the basis for distance weighting to obtain very accurate price estimates. Notably, NADA



teaches away from the nearest neighbor concept by accounting for variations from average based solely on list prices for clean, rough, and wholesale vehicles. As acknowledged by the Examiner, NADA's method for determining vehicle prices provides one of the best sources for automobile prices, leaving one of ordinary skill in the art unmotivated to improve on NADA's estimation method. However, Applicant's claimed invention is an improvement over NADA by using the nearest neighbor concept in addition to distance weighting adjustments. For at least these reasons, the Applicant's claimed invention is patentable in light of NADA.

The fee of $340.00 as applicable under the provisions of 37 C.F.R. § 41.20(b)(2), as well as any additional fees or credits, should be applied to Deposit Account 06-1510 (Ford Global Technologies, Inc.). A duplicate of this page is enclosed for this purpose.

Respectfully submitted,

JIE CHENG, ET AL.

By: _____

Matthew M. Jakubowski
Registration No. 44,801
Attorney for Applicants

Date: **November 1, 2004**

BROOKS KUSHMAN P.C.
1000 Town Center, 22nd Floor
Southfield, MI 48075-1238
Phone: 248-358-4400
Fax: 248-358-3351

Enclosure - Appendices

VIII. CLAIMS APPENDIX

23. A computer-implemented method for estimating market value of a used vehicle, the method comprising:

A) receiving data from a nearest neighbor database consisting of a number K of used vehicle nearest neighbor records, each used vehicle nearest neighbor record comprising resale information and a plurality of used vehicle features, at least one target used vehicle record comprised of a plurality of used vehicle features, at least one constraint for determining a neighbor relationship between a pair of used vehicles, and a neighborhood distance function for determining a distance between a pair of used vehicles, the number K is iteratively selected for estimation accuracy based on a historical database of N used vehicle records; and

B) determining an estimated value for the at least one target used vehicle based on the data from the nearest neighbor database, the at least one target used vehicle record, the at least one constraint, and the neighborhood distance function,

wherein the estimated value of the at least one target used vehicle is relied upon by individuals to at least price used vehicles for resale.

24. The method of claim 23 wherein the determining step includes the use of neural networks.

26. The method of claim 23, wherein determining step B) is comprised of:

B1) for each used vehicle nearest neighbor record in the nearest neighbor database, determining a weighted estimated value for the used vehicle nearest neighbor based on the data from the nearest neighbor database, the at least one target used vehicle record, the at least one constraint, and the neighborhood distance function; and

B2) determining an estimated value for the at least one target used vehicle based on the weighted estimated values for the number K of used vehicle nearest neighbors.

27. The method of claim 23, wherein the resale information includes at least one item selected from the group consisting of resale date, region, mileage, condition, and resale price.

28. The method of claim 27, wherein the plurality of vehicle features for each used vehicle nearest neighbor record and the at least one target used vehicle record individually include at least two items selected from the group consisting of vehicle type, model, series, trim level, engine type, transmission type, moon roof equipped, leather interior, interior color, and exterior color.

29. The method of claim 27, wherein the resale information includes resale price and resale region.

30. The method of claim 29, wherein the at least one constraint includes a constraint selected from the group consisting of the pair of vehicles are the same model, the pair of vehicles are the same series, the pair of vehicles have the same model year, the pair of vehicles are the same vehicle series, the difference in mileage between the pair of vehicles is less than about 3,000 miles.

31. The method of claim 30, wherein the at least one used vehicle record further comprises resale plan information.

32. The method of claim 31, wherein the planned resale information includes at least one item selected from the group consisting of intended resale date and region.

33. A computer-implemented method for estimating market value of a used vehicle, the method comprising:

A) receiving data which includes:

V_1 comprised of a number N of v_1, each v_1 comprising resale information and f_1, V_2 comprised of at least one v_2, each v_2 comprised of f_2, Const, F_d, K, and $Error_P$;

B) determining an $Error_K$ based on V_1, Const, F_d, and K; and

C) if $Error_K$ is less than about $Error_P$, then

C1) determining an estimated value for each v_2 in V_2 based on V_1, V_2, Const, F_d, and K;

C2) setting K to K plus 1 and $Error_P$ to $Error_K$; and

C3) looping to step B),

wherein:

V_1 equals data from a historical database comprised of a number N of used vehicle records,

v_1 equals a used vehicle record in V_1,

f_1 equals a plurality of vehicle features of v_1,

V_2 equals a data set comprised of at least one target used vehicle record,

v_2 equals a target used vehicle record,

f_2 equals a plurality of vehicle features of v_2,

Const equals an at least one constraint for determining a neighbor relationship between a pair of used vehicles,

F_d equals a neighborhood distance function for determining a distance between a pair of used vehicles,

K equals a nearest neighbor value,

$Error_P$ equals a previous estimation error, and

$Error_K$ equals a used vehicle market error,

wherein the estimated value of each v_2 in V_2 is relied upon by individuals to at least price used vehicles for resale.

34. The method of claim 33, wherein the resale information includes at least

one item selected from the group consisting of resale date, region, mileage, condition, and resale price.

35. The method of claim 33 wherein step B) is comprised of:

B1) for each v_1 in V_1,

B11) determining a neighbor group V' of K used vehicles v' for v from V_1 based on Const, F_d, and f_1;

B12) for each v' in V', determining a weighted estimated value for v_1 based on v', f_1 and F_d;

B13) determining an estimated value for v_1 based on each weighted estimated value of v_1;

B14) determining an estimated error for v_1 based on the estimated value for v_1 and the resale price of v_1; and

B2) determining $Error_K$ based on the estimated error for each v_1 in V_1, and N.

36. (previously presented) The method of claim 33 wherein step C1) is comprised of:

for each v_2 in V_2,

C11) determining a nearest neighbor group V" of K used vehicles v" for v_2 from V_1 based on Const, F_d, f_1, and f_2;

C12) for each v" in V", determining a weighted estimated value for v_2 based on v", F_d, f_1, and f_2;

C13) determining an estimated value for v_2 based on each weighted estimated values of v_2.

37. The method of claim 36 further comprising C14) storing v_2 with the estimated value for v_2 in a data set V_3 of used vehicles v_3 with estimated market values.

38. The method of claim 33, wherein f_1, and f_2 include at least two items selected from the group consisting of vehicle type, model, series, trim level, engine type, transmission type, moon roof equipped, leather interior, interior color, and exterior color.

39. The method of claim 38, wherein Const includes a constraint selected from the group consisting of the pair of vehicles are the same model, the pair of vehicles are the same series, the pair of vehicles have the same model year, the pair of vehicles are the same vehicle series, the difference in mileage between the pair of vehicles is less than about 3,000 miles.

40. The method of claim 39, wherein each v_2 further comprises planned resale information, wherein the planned resale information includes at least one item selected from the group consisting of intended resale date, region and resale channel.

41. The method of claim 33, wherein the determining step C1) includes the use of neural networks.

IX. EVIDENCE APPENDIX

Declaration Under 37 C.F.R. § 1.132, dated February 27, 2004.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

JIE CHENG, ET AL

Group Art Unit: 3629

Examiner: Michael J. Fisher

Serial No.: 09/607,069

Filed: June 29, 2000

For: METHOD FOR ESTIMATING A USED VEHICLE'S MARKET VALUE

Attorney Docket No.: 200-0382 / FMC 1236 PUS

DECLARATION UNDER 37 C.F.R. § 1.132

Box Non-Fee Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I, Yi Lu, declare as set forth below.

1. I have a B.S. Degree (1984) and M.S. Degree (1987), both in computer science.

2. I have been employed in the field of Market Analysis for eight (8) years and am currently employed with Ford Motor Company.

3. I am a co-inventor of the above patent application that was assigned to Ford Motor Company.

CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8

I hereby certify that this paper, including all enclosures referred to herein, is being deposited with the United States Postal Service as first-class mail, postage pre-paid, in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on:

3-02-04 — Date of Deposit

John R. Bosser — Matthew M. Jakubowski — Name of Person Signing

John R. Bosser — Signature

X. RELATED PROCEEDINGS APPENDIX

None